

# Notice of Allowability

Application No.

09/543,055

Examiner

Yasin M. Barqadle

Applicant(s)

PARUPUDI ET AL.

Art Unit

2153

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/25/2005.
2. ☒ The allowed claim(s) is/are 1-3, 5-8, 11, 12, 14, 15, 22-24, 26-32, 34-37, 40, 42, 43, 50-52 and 54-79.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


\* Certified copies not received: \_\_\_\_\_

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
**GLENTON B. BURGESS**  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

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### **Examiner's Amendment**

1. An examiner's amendment to the record is attached. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.....

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Lance Sadler (Reg. 38,605) On October 12, 2005.

**3. In the claims:**

- Please amend claims 1,22,30,50,70 and 77 as attached.
- Please cancel claims 9,10,13,16-21,38,39,41 and 44-49.
- Please replace the abstract as attached.

### **Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yasin Bargadle whose telephone number is 571-272-3947. The examiner can normally be reached on 9:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Burgess can be reached on 571-272-3949. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or public PAIR system. Status information for unpublished applications is available through private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YB

Art Unit 2153

  
**GLENN B. BURGESS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2100**

1. (Currently Amended) A method of determining the context of a computing device comprising;

determining whether any of a number of context providers are available to provide context information that can be processed by the computing device to ascertain its context by polling one or more of the context providers;

receiving context information from one or more of the context providers that are determined to be available; and

processing the context information on the computing device to determine the context of the computing device, wherein the processing of the information comprises:

mapping the context information to a node on a hierarchical tree structure that is carried on the device, the hierarchical tree structure comprising multiple nodes that represent physical or logical entities; and

traversing one or more nodes of the tree structure to ascertain a complete context,

wherein the processing of the context information further comprises ordering the context providers in accordance with a trust parameter that is assigned to each context provider and defines a level of trust associated with the context provider, and a confidence parameter that provides a measure of a context provider's confidence in its context information;

determining whether there are any conflicts with the context information and, if so, selecting only context information from certain ordered context providers; and  
decreasing, over time, the confidence parameter associated with a previously determined current context.

22. (Currently Amended) One or more computer-readable media having computer-readable instructions thereon which, when executed by a computing device, cause the computing device to:

determine whether any of a number of context providers are available to provide context information that can be processed by the computing device to ascertain its context by polling one or more of the context providers;

receive context information from one or more of the context providers that are determined to be available; and

process the context information on the computing device to determine the context of the computing device by:

mapping the context information to a node on a hierarchical tree structure that is carried on the device, the hierarchical tree structure comprising multiple nodes that represent physical or logical entities; and

traversing one or more nodes of the tree structure to ascertain a complete context,

wherein the context information is processed by further:

ordering the context providers in accordance with a trust parameter that is assigned to each context provider and defines a

level of trust associated with the context provider, and a confidence parameter that provides a measure of a context provider's confidence in its context information;

determining whether there are any conflicts with the context information and, if so, selecting only context information from certain ordered context providers; and  
decreasing, over time, the confidence parameter associated with a previously determined current context.

30. (Currently Amended) A method of determining the location of a computing device comprising:

determining whether any of a number of location providers are available to provide location information that can be processed by the computing device to ascertain its location by polling one or more of the location providers;

receiving location information from one or more of the location providers that are determined to be available; and

processing the location information on the computing device to determine the location of the computing device, wherein the processing of the information comprises:

mapping the location information to a node on a hierarchical tree structure that is carried on the device, the hierarchical tree structure comprising multiple nodes that represent physical or logical entities; and

traversing one or more nodes of the tree structure to

ascertain a complete location,  
wherein the processing of the location information further  
comprises:  
ordering the location providers in accordance with a trust  
parameter that is assigned to each location provider and defines a  
level of trust associated with the location provider, and a  
confidence parameter that provides a measure of a location  
provider's confidence in its location information;  
determining whether there are any conflicts with the location  
information and, if so, selecting only location information from  
certain ordered location providers; and  
decreasing, over time, the confidence parameter associated with a  
previously determined current location.

50. (Currently Amended) One Of more computer readable media  
having computer-readable instructions thereon which, when executed by  
a computing device, cause the computing device to:

determine whether any of a number of location providers are  
available to provide location information that can be processed by the  
computing device to ascertain its location by polling one or more of the  
location providers;

receive location information from one or more of the location  
providers that are determined to be available; and

process the location information on the computing device to determine the location of the computing device by mapping the context information to a node on a hierarchical tree structure that is carried on the device, the hierarchical tree structure comprising multiple nodes that represent physical or logical entities; and

traversing one or more, nodes of the tree structure to ascertain a context,

wherein the location information is further processed by:

ordering the location providers in accordance with a trust parameter that is assigned to each location provider and defines a level of trust associated with the location provider, and a confidence parameter that provides a measure of a location provider's confidence in its location information;

determining whether there are any conflicts with the location information and, if so, selecting only location information from certain ordered location providers; and  
decreasing, over time, the confidence parameter associated with a previously determined current location.

70. (Currently Amended) A method of determining a current context of a computing device comprising:

determining a current Context of the device by:

determining whether any of a number of context providers are available to provide context information that can be



processed by the computing device to ascertain its context by polling one or more context providers;

receiving context information from multiple different context providers;

mapping the context information to a node of a hierarchical tree structure that is carried by the device and having multiple nodes each of which represent a physical or logical entity; and

traversing the hierarchical tree structure to ascertain a complete device context;

receiving additional context information from one or more context providers; and

updating the current context of the device by:

mapping the context information to a node of the hierarchical tree structure that is carried by the device; and

traversing the hierarchical tree structure to ascertain a complete device context;

and further comprising;

ordering the context providers in accordance with a trust parameter that is assigned to each context provider and defines a level of trust associated with the context provider, and a confidence parameter that provides a measure of a context provider's confidence in its context information;

determining whether there are any conflicts with the context information and, if so, selecting only context information from certain ordered context providers; and  
decreasing, over time, the confidence parameter associated with a

previously determined current context.

77. (Currently Amended) A computing device comprising:

a computer-readable medium; and

a context service module on the computer-readable medium and configured to process information from multiple different context providers to determine a current device context, the context service module being configured to:

determine whether any of a number of context providers are available to provide context information that can be processed by the computing device to ascertain its context by polling one or more of the context provider;

receive context information from one or more of the context providers that are determined by the device to be available; and

process the context information on the computing device to determine the context of the computing device by:

mapping the context information to a node on a hierarchical *tree structure* that is carried on the device, the hierarchical tree structure comprising multiple nodes that represent physical or logical entities; and

traversing one or more nodes of the tree structure to ascertain a complete context,

wherein the context information is processed by further:

ordering the context providers in accordance with a trust parameter that is assigned to each context provider and defines a level of trust associated with the context provider, and a confidence parameter that provides a measure of a context

provider's confidence in its context information;

determining whether there are any conflicts with the context information and, if so, selecting only context information from certain ordered context providers; and  
decreasing, over time, the confidence parameter associated with a previously determined current context.

## ABSTRACT

Context-aware computing systems and methods are described. In particular embodiments, location aware systems and methods are described. In the described embodiments, hierarchical tree structures are utilized to ascertain a device context or location. The tree structures can be stored on or accessible to mobile computing devices so that the devices can determine their own particular context or location. In one embodiment, one of the tree structures comprises a Master World tree structure that contains nodes that represent geographical divisions of the Earth. Another of the tree structures can comprise a so-called Secondary World that contains nodes that represent physical or logical entities that are organization or company specific views of the world. A computing device can automatically determine its context or location by ascertaining a node on one or more of the tree structures and then traversing the tree structure to ascertain the complete context.